

Science Standard Articulated by Grade Level
Strand 3: Science in Personal and Social Perspectives

Concept 1: Changes in Environments Describe the interactions between human populations, natural hazards, and the environment.				
Kindergarten	Grade 1	Grade 2	Grade 3	Grade 4
			PO 1. Describe the major factors that could impact a human population (e.g., famine, drought, disease, improved transportation, medical breakthroughs).	PO 1. Describe how natural events and human activities have positive and negative impacts on environments (e.g., fire, floods, pollution, dams).
			PO 2. Describe the beneficial and harmful impacts of natural events and human activities on the environment (e.g., forest fires, flooding, pesticides).	PO 2. Evaluate the consequences of environmental occurrences that happen either rapidly (e.g., fire, flood, tornado) or over a long period of time (e.g., drought, melting ice caps, the greenhouse effect, erosion).

Italics denote a repetition of a performance objective (learned in an earlier grade) that is to be applied to grade level content or at a higher level of complexity.

The bulleted items within a performance objective indicate specific content to be taught.

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Strand 3: Science in Personal and Social Perspectives

Concept 1: Changes in Environments Describe the interactions between human populations, natural hazards, and the environment.			
Grade 5	Grade 6	Grade 7	Grade 8
PO 1. Explain the impacts of natural hazards on habitats (e.g., global warming, floods, asteroid or large meteor impacts).	PO 1. Evaluate the effects of the following natural hazards: <ul style="list-style-type: none"> • sandstorm • hurricane • tornado • ultraviolet light • lightning-caused fire 	PO 1. Analyze environmental risks (e.g., pollution, destruction of habitat) caused by human interaction with biological or geological systems.	PO 1. Analyze the risk factors associated with natural, human induced, and/or biological hazards, including: <ul style="list-style-type: none"> • waste disposal of industrial chemicals • greenhouse gases
PO 2. Propose a solution, resource, or product that addresses a specific human, animal, or habitat need.	PO 2. Describe how people plan for, and respond to, the following natural disasters: <ul style="list-style-type: none"> • drought • flooding • tornadoes 	PO 2. Analyze environmental benefits of the following human interactions with biological or geological systems: <ul style="list-style-type: none"> • reforestation • habitat restoration • construction of dams 	PO 2. Analyze possible solutions to address the environmental risks associated with chemicals and biological systems.
PO 3. Evaluate the possible strengths and weaknesses of a proposed solution to a specific problem relevant to human, animal, or habitat needs.		PO 3. Propose possible solutions to address the environmental risks in biological or geological systems.	

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Concept 1: Changes in Environments

Describe the interactions between human populations, natural hazards, and the environment.

High School

PO 1. Evaluate how the processes of natural ecosystems affect, and are affected by, humans.

PO 2. Describe the environmental effects of the following natural and/or human-caused hazards:

- flooding
- drought
- earthquakes
- fires
- pollution
- extreme weather

PO 3. Assess how human activities (e.g., clear cutting, water management, tree thinning) can affect the potential for hazards.

PO 4. Evaluate the following factors that affect the quality of the environment:

- urban development
- smoke
- volcanic dust

PO 5. Evaluate the effectiveness of conservation practices and preservation techniques on environmental quality and biodiversity.

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Concept 2: Science and Technology in Society Understand the impact of technology.				
Kindergarten	Grade 1	Grade 2	Grade 3	Grade 4
PO 1. Describe how simple tools (e.g., scissors, pencils, paper clips, hammers) can make tasks easier.	PO 1. Identify various technologies (e.g., automobiles, radios, refrigerators) that people use.	PO 1. Analyze how various technologies impact aspects of people's lives (e.g., entertainment, medicine, transportation, communication).	PO 1. Identify ways that people use tools and techniques to solve problems.	PO 1. Describe how science and technology (e.g., computers, air conditioning, medicine) have improved the lives of many people.
	PO 2. Describe how suitable tools (e.g., magnifiers, thermometers) help make better observations and measurements.	PO 2. Describe important technological contributions made by people, past and present: <ul style="list-style-type: none"> • automobile – Henry Ford • airplane – Wilbur and Orville Wright • telephone – Alexander G. Bell 	PO 2. Describe the development of different technologies (e.g., communication, entertainment, transportation, medicine) in response to resources, needs, and values.	PO 2. Describe benefits (e.g., easy communications, rapid transportation) and risks (e.g., pollution, destruction of natural resources) related to the use of technology.
		PO 3. Identify a simple problem that could be solved by using a suitable tool.	PO 3. Design and construct a technological solution to a common problem or need using common materials.	<i>PO 3. Design and construct a technological solution to a common problem or need using common materials.</i>

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Concept 2: Science and Technology in Society Develop viable solutions to a need or problem.			
Grade 5	Grade 6	Grade 7	Grade 8
PO 1. Describe the relationship between science and technology.	PO 1. Propose viable methods of responding to an identified need or problem.	<i>PO 1. Propose viable methods of responding to an identified need or problem.</i>	<i>PO 1. Propose viable methods of responding to an identified need or problem.</i>
PO 2. Explain how scientific knowledge, skills, and technological capabilities are integral to a variety of careers.	PO 2. Compare possible solutions to best address an identified need or problem.	<i>PO 2. Compare solutions to best address an identified need or problem.</i>	<i>PO 2. Compare solutions to best address an identified need or problem.</i>
PO 3. <i>Design and construct a technological solution to a common problem or need using common materials.</i>	PO 3. Design and construct a solution to an identified need or problem using simple classroom materials.	<i>PO 3. Design and construct a solution to an identified need or problem using simple classroom materials.</i>	<i>PO 3. Design and construct a solution to an identified need or problem using simple classroom materials.</i>
	PO 4. Describe a technological discovery that influences science.	PO 4. Describe a scientific discovery that influences technology.	PO 4. Compare risks and benefits of the following technological advances: <ul style="list-style-type: none"> • radiation treatments • genetic engineering (See Strand 4 Concept 2) • airbags (See Strand 5 Concept 2)

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Concept 2: Science and Technology in Society

Develop viable solutions to a need or problem.

High School

PO 1. Analyze the costs, benefits, and risks of various ways of dealing with the following needs or problems:

- various forms of alternative energy
- storage of nuclear waste
- abandoned mines
- greenhouse gases
- hazardous wastes

PO 2. Recognize the importance of basing arguments on a thorough understanding of the core concepts and principles of science and technology.

PO 3. Support a position on a science or technology issue.

PO 4. Analyze the use of renewable and nonrenewable resources in Arizona:

- water
- land
- soil
- minerals
- air

PO 5. Evaluate methods used to manage natural resources (e.g., reintroduction of wildlife, fire ecology).

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Concept 3: Human Population Characteristics

Analyze factors that affect human populations.

High School

PO 1. Analyze social factors that limit the growth of a human population, including:

- affluence
- education
- access to health care
- cultural influences

PO 2. Describe biotic (living) and abiotic (nonliving) factors that affect human populations.

PO 3. Predict the effect of a change in a specific factor on a human population.

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